

REMARKS

Claim Amendments

Claims 1, 16, and 30 have been amended to add the limitation, “wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component”. Support for these amendments can be found in the application as filed, page 4, first full paragraph (“such that the alkenylsuccinic anhydride component and the starch in the emulsion and the second starch component are present at a starch:alkenylsuccinic anhydride component weight ratio . . .”).

Claims 1, has been further amended to delete “cationic starches” from the Markush group for the first starch component.

Claim 6 has been amended to substitute “alkenylsuccinic anhydride component” for “emulsion”. Support for this amendment can be found in the application as filed on page 8, first full paragraph.

Claim 33 has been amended to substitute “alkyl or alkenyl ketene dimer” for each occurrence of “alkyl ketene dimer”. Support for these amendments can be found in the application as filed, page 18, lines 4-5.

Applicants are not conceding in this application that the original versions of amended claims are not patentable over the art cited by the Examiner, as the present claim amendments are intended only to facilitate expeditious allowance of valuable subject matter. Applicants respectfully reserve the right to present and prosecute the original versions of the presently amended claims in one or more continuation applications.

Claim Rejections Under 35 U.S.C. § 112, First Paragraph

Claim 6 stands rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the enablement requirement. 11/21/2007 Office Action, page 2, last paragraph. Specifically, the Office Action states that the hydrolyzed alkenylsuccinic

anhydride amount of about 1 to about 99% is inconsistent with the starch amounts in claims 2 and 3. 11/21/2007 Office Action, page 3, first paragraph.

Applicants have amended claim 6 to state that the specified amount of hydrolyzed alkenylsuccinic anhydride is based on the total weight of the alkenylsuccinic anhydride component (rather than the total weight of the emulsion). Applicants respectfully assert that this amendment resolves any alleged inconsistency between claim 6 and claims 2 and 3. Applicants also respectfully assert that the alkenylsuccinic anhydride amount recited in amended claim 6 does not limit the amounts of the first and second starch components, so any assertion of non-enablement based on the ratio of the alkenylsuccinic anhydride component to the starch components is moot. Accordingly, Applicants respectfully request the reconsideration and withdrawal of the rejection of claim 6 under 35 U.S.C. § 112, first paragraph.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-11, 16, 30, and 33 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. 11/21/2007 Office Action, page 3, last paragraph.

With respect to claims 1, 2, 7-9, 16, and 30, the Office Action states that these claims recite a starch:alkenylsuccinic anhydride ratio but fail to specify if the start is the first starch, the second starch, or both starches combined. 11/21/2007 Office Action, page 4, first paragraph. Applicants have amended claims 1, 16, and 30 to clearly recite that the starch component of the starch:alkenylsuccinic anhydride ratio is both starches combined. Specifically, independent claims 1, 16, and 30 as currently amended recite the limitation, “wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component”. Applicants respectfully assert that the amendment to claim 1 is sufficient to overcome the indefiniteness rejection of dependent claims 2-11.

With respect to claim 33, the Office Action states that it similarly recites a starch:alkyl ketene dimer ratio but fails to specify if the starch is the first starch, the second starch, or both starches combined. 11/21/2007 Office Action, page 4, first paragraph. Applicants have amended claim 33 to recite the limitation, “wherein the starch component of the starch:alkyl or alkenyl ketene dimer weight ratio is the total weight of the first starch component and the second starch component”. Applicants respectfully assert that this amendment is sufficient to overcome the indefiniteness rejection of claim 33.

With respect to claim 6, the Office Action states that claim 6 is further indefinite based on the hydrolyzed alkenylsuccinic anhydride amount of about 1 to about 99%. 11/21/2008 Office Action, page 4, second paragraph. Applicants respectfully assert that the current amendment to claim 6, which makes clear that the specified weight percent is based on the weight of the alkenylsuccinic anhydride component, is sufficient to overcome the indefiniteness rejection.

For all of the above reasons, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1-11, 16, 30, and 33.

Anticipation or Obviousness Rejection over Yoshioka + Chunyu

Claims 1-9, 16 and 30 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over European Patent Application Publication No. EP 0 257 772 A1 to Yoshioka et al. (hereinafter “Yoshioka”), as evidenced by C. Chunyu “Alkenyl Succinic Anhydrides (ASA): a Neutral sizing agent”, China Pulp & Paper, No. 3, 2002 (hereinafter “Chunyu”; i.e., the Chunyu English translation previously provided by Applicants). 11/21/2007 Office Action, page 5, third paragraph. Applicants respectfully traverse this rejection to the extent it may be applicable to the claims as currently amended.

Yoshioka generally describes a process for making paper using a substituted succinic anhydride as a sizing agent which has the steps of preparing pulp slurry containing (a) an aqueous dispersion of a substituted succinic anhydride in which a

cationic tapioca starch containing at least 0.3 percent by weight of basic nitrogen is added and mixed, and (b) a colloidal silica, and forming a paper sheet to improve the retentions of a fine fiber and a filler in the pulp slurry in the sheet forming step and to largely suppress the operation of decreasing the sizing performance of the substituted succinic anhydride with the colloidal silica (b) added as the retention aid, thereby preparing sheet paper having excellent sizing effect. Yoshioka abstract. Note that Yoshioka disperses the substituted succinic anhydride in a cationic tapioca starch.

Chunyu generally describes the use of alkenylsuccinic anhydride as a sizing agent in papermaking. Chunyu describes the use of cationic starch as an emulsifier for ASA. Chunyu, page 7, lines 6-7.

Applicants respectfully assert that claims 1-9, 16 and 30 are not anticipated by Yoshioka or obvious over the combination of Yoshioka and Chunyu because the cited references do not teach or suggest an alkenylsuccinic anhydride component containing alkenylsuccinic anhydride particles suspended in a first starch component containing emulsifying starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof.

Anticipation requires that all of the limitations of the claim be found within a single prior art reference. *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). For a rejection under section 102 to be proper, the cited reference must clearly and unequivocally disclose the claimed subject matter without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference. *In re Arkley*, 172 USPQ 524, 526 (C.C.P.A. 1972).

Establishing a prima facie case of obviousness requires that all limitations of the claim be taught or suggested by the prior art. See, e.g., *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003); *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974).

Applicants' independent claim 1 as currently amended recites "an alkenylsuccinic anhydride component containing alkenylsuccinic anhydride particles suspended in a first starch component containing emulsifying starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof". Independent claim 16, a process claim, and independent claim 30, a product-by-process claim, each recite the step of "(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, ionic starches, and mixtures thereof". Thus, each of the rejected independent claims requires emulsification of alkenylsuccinic anhydride in a first starch component that is a non-ionic starch, an anionic starch, or a mixture of a non-ionic starch and an anionic starch. The Office has not established that Yoshioka or Chunyu teaches or suggests these limitations. In particular, Yoshioka and Chunyu both teach the use of cationic starch, which is excluded from the first starch component of claims 1, 16, and 30. Accordingly, a prima facie case of obviousness has not been established, and independent claims 1, 16, and 30 are neither anticipated by Yoshioka nor obvious over Yoshioka in view of Chunyu. Given that claims 2-9 depend ultimately from and further limit claim 1, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-9, 16, and 30 under 35 U.S.C. § 102(b) over Yoshioka or under 35 U.S.C. § 103(a) over Yoshioka in view of Chunyu.

Obviousness Rejection over Yoshioka

Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Yoshioka. 11/21/2007 Office Action, page 8, first paragraph. Applicants respectfully traverse this rejection to the extent it may be applicable to the claims as currently amended.

Yoshioka is described above.

Claims 10 and 11 depend from and further limit claim 1. As described above, Yoshioka does not teach or suggest the claim 1 limitation, "an alkenylsuccinic anhydride component containing alkenylsuccinic anhydride particles suspended in a first starch component containing emulsifying starch selected from the group consisting of non-ionic

starches, anionic starches, and mixtures thereof'. Claims 10 and 11 are therefore patentable over Yoshioka. Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 10 and 11 under 35 U.S.C. § 103(a) over Yoshioka.

Obviousness Rejection over Yoshioka + Hassler

Claim 33 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Yoshioka in view of U.S. Patent No. 6,159,339 to Hassler et al. (hereinafter "Hassler"). 11/21/2007 Office Action, page 8, third paragraph. Applicants respectfully traverse this rejection to the extent it may be applicable to the claims as currently amended.

Yoshioka is described above.

Hassler generally describes a paper size consisting essentially of a) alkyl ketene dimer and/or alkenyl succinic acid anhydride; b) degraded, liquid cationic starch having a cationic charge density of 0.5 to 3.5 meqv/g, a degree of substitution of more than 0.1 and a viscosity of less than 10,000 cps; and c) water, and a process for making paper products in which this paper size is added to the pulp. Hassler abstract. Note that the Hassler paper size uses a cationic starch.

Applicants respectfully assert that claim 33 is patentable over the combination of Yoshioka and Hassler because the cited references do not teach or suggest the use of an alkyl or alkenyl ketene dimer component containing alkyl or alkenyl ketene dimer particles suspended in a first starch component containing emulsifying starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof. Independent claim 33 recites "an alkyl or alkenyl ketene dimer component containing alkyl or alkenyl ketene dimer particles suspended in a first starch component containing emulsifying starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof". The Office has not established that Yoshioka or Hassler teaches or suggests this limitation. In particular, Yoshioka and Hassler both teach the use of cationic starch, which is excluded from the first starch component of claim 33. Claim 33 is therefore patentable over the combination of Yoshioka and Hassler. Accordingly,

Applicants respectfully request the reconsideration and withdrawal of the rejection of claim 33 under 35 U.S.C. § 103(a) over Yoshioka in view of Hassler.

Nonstatutory Double Patenting Rejections

Claims 1, 4-11, and 33 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3-10, and 45 of copending Application No. 10/534,202. 11/21/2007 Office Action, page 9, last paragraph.

Claims 1, 3-11, and 33 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 6-13, and 47 of copending Application No. 10/533,190. 11/21/2007 Office Action, page 10, second full paragraph.

Applicants thank the Examiner for pointing out the potential obviousness-type double patenting issue between the claims of the present application and those of co-pending application Nos. 10/534,202 and 10/533,190. In view of the present claim amendments and the possibility that claims in the cited applications will be amended before allowance, Applicants will defer responding to this provisional rejection until claims in the reference applications are allowed, claims in the present application are otherwise allowable, and it is determined whether this provisional rejection becomes an actual rejection.

New Claim

Claim 34 has been added to further claim the invention. Support for claim 34 can be found in claim 1 as filed.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Assignee.

Respectfully submitted,

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